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09/700,447	02/06/2001	Moe K. Barani	130815.90026	3721

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Michael J McGovern  
Quarles & Brady  
411 East Wisconsin Avenue Suite 2040  
Milwaukee, WI 53202-4497

EXAMINER
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NGUYEN, TRAN N

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/700,447

Applicant(s)

BARANI ET AL.

Examiner

Tran N. Nguyen

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 13-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) 23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 01 April 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: attachment 1

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 2

Art Unit: 2834

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the PCT file.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 13 and 16-17 (read as depending from claim 13)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Grosjean (US 1868825) in view of Syverson (US 5918728, hereafter **Syverson' 728**).

Grosjean discloses a roller having a first end and a second end, the roller comprising: a cylindrical rotor disposed inside of and mounted to rotate with said cylindrical roller around the stationary shaft; wherein, as shown in figs 1-2, the motor has a motor cylindrical case covering the rotor, the cylindrical metal rotor housing, is disposed inside of and secured to the roller to rotate with the roller; wherein the motor is supported by two spaced apart bearings (7) which space the rotor from the stator with an air gap therebetween.

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 3

Art Unit: 2834

Grosjean substantially discloses the claimed invention, except for the motor is a brushless d.c. motor with a rotor is formed of a plurality of longitudinal segments of permanent magnetic material, wherein the segments of magnets oriented with north-south magnetic polarities in radial direction. Grosjean's Figures 1-2 appears to show the rotor with permanent magnets. However, Grosjean silences about the component of the rotor, i.e., the rotor is formed of permanent magnet or core and winding.

**Syverson' 728**, however, teaches a roller motor, which is a brushless d.c. motor, having a rotor with a plurality of longitudinal segments of permanent magnetic material, wherein the segments of magnets oriented with north-south magnetic polarities in radial direction. Those skilled in the art would realize that brushless dc motors, with permanent magnet rotors, are well known in the art. Brushless dc motors being used in motor rollers are a known industrial application of the brushless dc motors. Furthermore, the Syverson's motor with permanent magnet rotors would ensure reliability of the motor because permanent magnets are known to provide a constant and reliable source of magnetic fields.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Grosjean roller motor by embodying the rotor with a plurality of longitudinal segments of permanent magnetic material, wherein the segments of magnets oriented with north-south magnetic polarities in radial direction, as taught by Syverson. Doing so would ensure the reliability of the roller

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 4

Art Unit: 2834

because the rotor is provided with permanent magnets, which is known to provide a constant and reliable source of magnetic fields.

4. **Claims 13, 15-17 (read as depending from claim 13)** are rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson (US 5918728, hereafter **Syverson' 728**) in view of Grosjean (US 1868825).

**Syverson' 728** substantially discloses the claimed invention having a stator; a rotor; and two spaced apart bearings (30, 32) at two ends of the rollers, wherein the bearings spaced the rotor and the stator apart at an airgap (see the figure and cols 3-4) and support the shaft. Syverson only differs from the claimed invention in one respect that is a cylindrical metal housing forming a part of the rotor for receiving the permanent magnets (P.Ms) and rotating with the roller.

Grosjean, however, discloses a roller with motor comprising rotor having a metal housing (figs 1-2), wherein the rotor metal housing is disposed inside and rotatably secured to the roller.

The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this instant case, those skilled in the art would realize that the importance of Grosjean's teaching of a roller having a motor with

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 5

Art Unit: 2834

rotor metal housing for mechanically supporting the rotor so that the rotor rotates the roller. Hence, the rotor assembly with a rotor housing would be improved the mechanical structure of the roller.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the **Syverson' 728** roller motor by providing a metal housing forming a part of the rotor for receiving the permanent magnets and supporting the shaft and the stator, as taught by Grosjean. Doing so would provide a means to mechanically support the PM segments while enabling the rotor to rotate the roller.

5. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over Syverson (US 6244427, hereafter **Syverson'427**) and Grosjean.

**Syverson'427**, which is a continuation-in-part of application Ser. No. 09/294232 filed Apr. 19, 1999, which is a continuation-in-part of application Ser. No. 08/931593 filed **Sep. 16, 1997**, now U.S. Pat. No. 5,918,728 (herein Syverson'728).

**Syverson'427** substantially discloses the claimed invention, particularly for the limitations of the motor assembly having a third bearing that is disposed beyond the second bearings and proximate the second end of the roller (fig 8). Syverson'427 does not disclose a cylindrical metal housing forming a part of the rotor for receiving the permanent magnets (P.Ms) and rotating with the roller.

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 6

Art Unit: 2834

Grosjean, however, discloses a roller with motor comprising rotor having a metal housing (figs 1-2), wherein the rotor metal housing is disposed inside and rotatably secured to the roller.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the **Syverson' 427** roller motor by providing a metal housing forming a part of the rotor for receiving the permanent magnets and supporting the shaft and the stator, as taught by Grosjean. Doing so would provide a means to mechanically support the PM segments while enabling the rotor to rotate the roller.

6. **Claims 18-19(read as depending from claim 13)** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Syverson'728** and **Grosjean**, as applied in the rejections, in sections 3-4 herein, against the base claims, and further in view of level of ordinary skills of a worker in the art and Fujitani et al (US 5834866).

The combination of Syverson'728 and Grosjean refs discloses the claimed invention, except for the limitations of the stator coil being configure with a number of turns and the coil's wire is selected with a gauge to produce 10RMS volts per 100 RPM for an applied stator voltage of 24 RMS volts per phase, and each stator coil encircles a single stator tooth.

Regarding a selection of the wire's gauge size and a number of turns of the wire to form a stator coil so that the stator coil would produce 10RMS volts per 100 RPM for an applied stator voltage of 24 RMS volts per phase, this is a matter of obvious engineering design choice because of the following:

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 7

Art Unit: 2834

Syverson discusses about the gauge size of the wire and the speed of the motor (col 4, lines 1-58) at various size of the wire gauge and various coil turns of stator's windings. Thus, those skilled in the art would understand that, by applying the Syverson's disclosure, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the stator of the Syverson's motor by selecting an appropriate wire's gauge size and determine an appropriate number of coil turns in order to obtain a workable range between the ratio of the voltage to the speed of the motor. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges, in this case the range of number of turns of the windings and the range of the wire gauge size, involves only routine skill in the art. **In re Aller, 105 USPQ 233.**

Regarding each stator coil encircle a single stator tooth, **Fujitani** discloses a stator having each stator coil concentrately wound around each stator pole in an encircled manner for obtaining high magnetic efficiency for the motor. Concentrate winding by encircling coil around each magnetic pole is well known in the art (see cited refs).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson's roller motor by configuring the stator winding as concentrate winding each coil per stator pole, as taught by Fujitani. Doing so would obtain high magnetic efficiency for the motor.

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 8

Art Unit: 2834

7. **Claims 20-22** (*wherein claim 20 is as depending from claim 13*) are rejected under 35 U.S.C. 103(a) as being unpatentable over **Syverson'728** and **Grosjean**, as applied in the rejections against the base claim, and further in view of Von Der Heide (US 4882511).

**Syverson'728** particularly discloses the motor is a brushless motor, i.e., a motor having a driving circuit that is a circuit electronically commutates current to the stator coil. However, Syverson does not disclose the electronic controller circuit with position sensors. Thus, the combination of Syverso'728 and Grosjean refs discloses the claimed invention, except for the limitations of the sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling commutation of current to the stator.

Von Der Heide, however, teaches a brushless motor having an electronic controller including three position sensors (42-44) disposed on a circuit board located within a motor housing (figs 2-3) for providing a motor with improving torque constancy. The Examiner also takes Official Notice that position sensor is a well-known component in dynamoelectric machinery art.

Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the Syverson'728 roller motor by providing a position sensor having three Hall effect devices mounted on a circuit board with electronic circuit controller for controlling commutation of current to the stator, as taught by Von Der Heide. Doing so would provide the

**Application/Control Number: 09/700447**

**Docket No. : 130815.90026**

Page 9

Art Unit: 2834

motor with a detection means for positioning the rotor for improving torque constancy of the motor.

***Allowable Subject Matter***

8. **Claim 23** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tran Nguyen whose telephone number is (703) 308-1639.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. The fax phone number for this Group is (703) 305-3431 (32).



TRAN NGUYEN

PRIMARY PATENT EXAMINER

TC-2800